REMARKS

The present application was filed on January 5, 2004 with claims 1 through 25. Claims 1 through 25 are presently pending in the above-identified patent application. Claims 1, 13, and 23 are proposed to be amended and claim 12 is proposed to be cancelled, without

5   prejudice, herein.

In the Office Action, the Examiner rejected claims 1, 3, 7, 10, 12, 13, 15, 18, 21, and 23 under 35 U.S.C. §102(b) as being anticipated by Yamao (United States Patent Number 5,203,024), rejected claims 1, 2, 4, 6-8, 10-14, 16, 18, 19, and 21-24 under 35 U.S.C. §102(e) as being anticipated by Li et al. (United States Patent Application Publication Number

10   2004/0266375), rejected claims 2 and 14 under 35 U.S.C. §103(a) as being unpatentable over Yamao in view of Taira et al. (United States Patent Application Publication Number 2001/0001760), rejected claims 8, 9, 19, and 20 under 35 U.S.C. §103(a) as being unpatentable over Yamao, and rejected claims 9 and 20 under 35 U.S.C. §103(a) as being unpatentable over Li et al. The Examiner has indicated that claims 5, 17, and 25 would be allowable if rewritten in

15   independent form.

Independent Claims 1, 13 and 23

Independent claims 1, 13, and 23 were rejected under 35 U.S.C. §102(b) as being anticipated by Yamao and under 35 U.S.C. §102(e) as being anticipated by Li et al. Regarding claim 1, the Examiner asserts that Yamao discloses a predictive antenna selector 7-10 that

20   evaluates a signal quality of each of said plurality of antennas and selects an antenna to communicate one or more frames based on said signal quality evaluation (see, col. 3, line 58, to col. 5, line 2). Regarding claim 1, the Examiner asserts that Li discloses a predictive antenna selector 34 that evaluates a signal quality of each of said plurality of antennas and selects an antenna to communicate one or more frames based on said signal quality evaluation (see,

25   paragraphs [0017]-[0020] and [0021]- [0024]).

Applicant notes that Yamao teaches that

it should be noted that that as the assigned slot is S3 in the present embodiment, the measurement is carried out during the slot S2 which is just before the assigned time slot. When the assigned time slot is S2, the measurement

30   is of course carried out during the slot S1 which is just before the assigned time slot.
(Col. 5, lines 3-8.)

Applicant also notes that Yamao teaches that "FIG. 3A...is the same as FIG. 11A" (col. 3, lines 66-67) and that the slots of FIG. 11A are contained in a single frame. Thus, Yamao teaches that the antenna selected for a slot in a frame is based on the signal quality of a previous slot in the *same frame*. While Yamao does not explicitly address the issue of predicting signal quality for slot 1, a person of ordinary skill in the art would use the frame preamble for predicting this signal quality, since Yamao teaches to use the signal quality information immediately preceding the assigned time slot (as noted in the above citation from Yamao).

Similarly, Applicant notes that Li teaches that

[0021] In accordance with the present invention, *the preamble transmitted by any 802.11 WLAN device has a further use by wireless communications device 10. Additionally, the preamble may be used to verify the relative quality of signals received by the multiple antennas.* In other words, the present invention may be applied to all 802.11 protocols including the most popular ones, i.e., 802.11b, 802.11a, 802.11 g and 802.11 n. The preamble as a whole, no matter whether repeating or not, may be subdivided and individual portions used by the different antennas. Thus, the subdivided preamble portions for any 802.11 protocol may be used for training wireless communications device 10.

[0022] The antenna selection scheme illustrates the dynamic selection and antenna priority process that enables wireless communications device 10 to process signals having the highest quality. By way of example, the four antennas A_0, A_1, A_2 and A_3 may be partitioned into two groups, with one group including antennas A_0 and A_2 and the other group including antennas A_1 and A_3. With the arrival of the first portion of the preamble, receiver 12 sequentially evaluates the signals received by the antennas in the first group *during the training period.* By way of example, antenna A_0 may use the first 5.5 symbols and antenna A_2 may use the subsequent 1.8 symbols. Then, with the arrival of the each symbol, receiver 12 sequentially evaluates the signals received from antennas in the second group *during the second short training symbol.*

[0023] A comparison of the signals received by the first group may show the signal received by antenna A_0, for example, to be the highest quality. A comparison of the signals received by the second group may show the signal received by antenna A_1, for example, to be the highest quality. Then, a further comparison between the highest rated signals and corresponding antennas from the first and second groups may show, for example, that the signal received by antenna A_0 to be the highest quality. Accordingly, antenna A_0 may be selected for the "first tier group" with the other antennas placed in the "second tier group."

[0024] Thus, in this embodiment channel evaluation circuit 34 (see FIG. 1) evaluates signals received by all of the antennas, selecting the one antenna that provides the highest quality signal for the "first tier group" and holding all other antennas in the "second tier group." As subsequent preamble packets are

received, switch controller 32 "pairs" the one antenna in the "first tier group" with an antenna selected from the "second tier group". With the arrival of each preamble packet, channel evaluation circuit 34 pairs the one antenna with a different antenna selected from the "second tier group" to determine the antenna combination that provides wireless communications device 10 with the highest performance.
(Paragraphs [0021]-[0024]; emphasis added.)

Thus, Li teaches that the antenna selected for a slot in a frame is based on the preamble in the *same frame*. Independent claims 1, 13, and 23, as amended, require evaluating a signal quality of each of said plurality of antennas *of at least a portion of one **prior frame*** and selecting an antenna to communicate one or more frames based on said signal quality evaluation.

Thus, Yamao and Li et al., alone or in combination, do not disclose or suggest evaluating a signal quality of each of said plurality of antennas of at least a portion of one prior frame and selecting an antenna to communicate one or more frames based on said signal quality evaluation, as required by independent claims 1, 13, and 23, as amended.

Additional Cited References

Taira was also cited by the Examiner for its disclosure of evaluating signal quality of each antenna during a preamble portion of a frame. Taira teaches that, "in the embodiment 3, it is essential to predict a reception power intensity *during the processing of the preamble portion.*" (Paragraph 0065; emphasis added.)

Thus, Taira et al. do not disclose or suggest evaluating a signal quality of each of said plurality of antennas and selecting an antenna to communicate one or more frames based on said signal quality evaluation, as required by independent claims 1, 13, and 23, as amended.

Dependent Claims 2-12, 14-22 and 24-25

Dependent claims 3, 7, 10, 12, 15, 18, and 21 were rejected under 35 U.S.C. §102(b) as being anticipated by Yamao, claims 2, 4, 6-8, 10-12, 14, 16, 18, 19, 21, 22, and 24 were rejected under 35 U.S.C. §102(b) as being anticipated by Li et al., claims 2 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Yamao in view of Taira et al., claims 8, 9, 19, and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Yamao, and claims 9 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Li et al.

Claims 2-12, 14-22, and 24-25 are dependent on independent claims 1, 13, and 23, respectively, and are therefore patentably distinguished over Yamao, Li et al., and Taira et

al., alone or in combination, because of their dependency from amended independent claims 1, 13, and 23 for the reasons set forth above, as well as other elements these claims add in combination to their base claim. The Examiner has already indicated that claims 5, 17, and 25 would be allowable if rewritten in independent form.

5   All of the pending claims, i.e., claims 1-25, are in condition for allowance and such favorable action is earnestly solicited.

     If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

10   The Examiner's attention to this matter is appreciated.

Respectfully submitted,

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Kevin M. Mason
Attorney for Applicants
Reg. No. 36,597
Ryan, Mason & Lewis, LLP
1300 Post Road, Suite 205
Fairfield, CT 06824
20   (203) 255-6560